## REMARKS

Claims 12 through 20 are pending in this application. Claims 12 and 20 have been amended. Care has been exercised to avoid the introduction of new matter. Indeed, adequate descriptive support for the present amendment should be apparent throughout the originally filed disclosure as, for example, Fig. 2 and the related discussion thereof in the written description of the specification noting upper silicon surface layer 20B, and noting that the amendment to claim 20 is editorial in nature and comes at the suggestion of the Examiner. Applicants submit that the present Amendment does not generate any new matter issue.

**Claim Objection**

The Examiner objected to claim 20 identifying a perceived formalistic issue and courteously suggested remedial language. Claim 20 has been amended consistent with the Examiner's courteous suggestion, thereby overcoming the stated basis for the claim objection. Accordingly, withdrawal of the objection to claim 20 is solicited.

**Claims 12 through 14, 16, 18 and 19 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by Han et al.**

In the statement of the rejection the Examiner referred to Figs. 4 through 6, asserting the disclosure of a semiconductor device comprising, *inter alia*, silicon carbide layer 112 said to have a silicon surface region. This rejection is traversed.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art.

*Dayco Prods., Inc. v. Total Containment, Inc. 329 F.3d 1358 (Fed. Cir. 2003)*; *Crown Operations International Ltd. v. Solutia Inc., 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002).* In imposing a rejection under 35 U.S.C. § 102 the Examiner is required to specifically identify wherein an applied reference is asserted to identically disclose each and every feature of a claimed invention. *In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).* That burden has not been discharged. Moreover, there is a significant difference between the claimed semiconductor device and the semiconductor device disclosed by Han et al. that scotches the factual determination that Han et al. disclose a semiconductor device identically corresponding to that claimed.

Specifically, the semiconductor device defined in independent claim 12 comprises a silicon carbide layer which has an upper silicon surface region. It is this composite silicon carbide layer and upper silicon surface region which lines the opening, and a diffusion barrier layer is deposited thereon. It is **not** apparent and the Examiner did **not** point out, as judicially required, wherein Han et al. disclose or suggest any such semiconductor device having a silicon carbide layer with an upper silicon surface region lining the opening. *In re Rijckaert supra, Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick supra.*

Applicants would note that silicon carbide layer 112 of the device disclosed by Han et al. is just what Han et al say it is, i.e., a silicon-rich carbide (SRC) barrier layer 112 (column 4 of Han et al., lines 36 and 37, for example). Where is there a silicon surface region, let alone an upper silicon surface region?

Although not considered necessary, in order to expedite prosecution and for clarity, claim 1 has been amended to clarify that the silicon surface region of the silicon carbide layer is on the upper surface. Certainly, no such structure is disclosed or suggested by Han et al.

The above argued structural difference between the claimed semiconductor device and the semiconductor device disclosed by Han et al. undermines the factual determination that Han et al. disclose a semiconductor device identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc., 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992)*; *Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986)*. Applicants, therefore, submit that the imposed rejection of claims 12 through 14, 16, 18 and 19 under 35 U.S.C. § 102 for lack of novelty as evidenced by Han et al. is not factually viable and, hence, solicit withdrawal thereof.

**Claims 17 and 20 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Han et al.**

In the statement of the rejection the Examiner concluded that one having ordinary skill in the art would have been motivated to optimize the silicon surface region of the silicon carbide layer disclosed by Han et al. to arrive at the thickness parameters of the rejected claims. This rejection is traversed.

Firstly, claims 17 and 20 depend from independent claim 12. Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 12 under 35 U.S.C. § 102 for lack of novelty as evidenced by Han et al. Specifically, Han et al. neither disclose nor suggest a silicon carbide layer having an upper silicon surface region. The Examiner's additional comments do not cure the previously argued deficiencies.

Moreover, Applicants **separately argue** the patentability of claims 17 and 20. Specifically, the Examiner did not factually establish:

1) that the device disclosed by Han et al. contains a silicon carbide layer having an upper silicon surface region; or

2) that the thickness of any such non-existent upper silicon surface region is an art-recognized result effective variable.

Based upon the foregoing it is legally erroneous to include that one having ordinary skill in the art would have been realistically motivated to optimize the thickness of any phantom upper silicon surface region, since the existence thereof has not been established and the Examiner did not factually establish that the thickness is an art-recognized result effective variable. *In re Rijckaert supra, In re Yates, 663 F.2d 1054, 211 USPQ 1149 (CCPA 1981); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).*

Applicants, therefore, submit that the imposed rejection of claim 17 and 20 under 35 U.S.C. § 103 for obviousness predicated upon Han et al. is not factually or legally viable and, hence, solicit withdrawal thereof.

**Claim 15 was rejected under 35 U.S.C. § 103 for obviousness predicated upon Han et al. in view of Jin et al.**

This rejection is traversed. Specifically, claim 15 depends from independent claim 12. Applicants incorporate wherein the arguments previously advanced in traversing the imposed rejection of claim 12 under 35 U.S.C. § 102 for lack of novelty as evidenced by Han et al. Specifically, Han et al. neither disclose nor suggest a silicon carbide layer having an upper silicon surface region. The additional reference to Jin et al. does not cure the argued deficiencies of Han et al. Accordingly, even **if** the applied references are combined, the claimed invention would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988).*

Applicants, therefore, submit that the imposed rejection of claim 15 under 35 U.S.C. § 103 for obviousness predicated upon Han et al. in view of Jin et al. is not factually or legally viable and, hence solicit withdrawal thereof.

Based on the foregoing, it should be apparent that the Examiner's objection and rejections have been overcome, and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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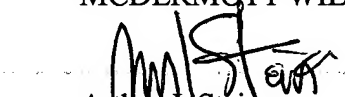

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